STATE OF CALIFORNIA - CALIFORNIA STATE TRANSPORTATION AGENCY

EDMUND G. BROWN JR., Governor

DEPARTMENT OF TRANSPORTATION
DIVISION OF MAINTENANCE
STRUCTURE MAINTENANCE & INVESTIGATIONS
100 South Main Street, 3rd Floor
LOS ANGELES, CA 90012
PHONE (213) 897-2004
FAX (213) 897-2033

Making Conservation a California Way of Life.

June 14, 2018

Mr. Shane Silsby
Director of Public Works
County of Orange
P O Box 4048
Santa Ana, CA 92702-4048

Dear Mr. Silsby:

In accordance with Title 23 of the Code of Federal Regulations (Federal Highway Act) and the National Bridge Inspection Standards (NBIS), Caltrans Structure Maintenance and Investigations performed an inspection of 1 bridge under your jurisdiction. The type of inspection is indicated on the bridge report transmittal sheet. The bridges have been rated to indicate their deficiencies, structural adequacy, safe load carrying capacity and overall general condition.

Enclosed are copies of the Bridge Inspection Reports for the structures noted on the attached transmittal sheet. These reports contain descriptions of physical changes to the structures since the last inspection, recommendations for work to be done, and additional information not recorded in the previous Bridge Reports.

Your attention is directed to the requirements of Title 23, Part 650 of the Code of Federal Regulations, where newly completed structures or any modification of existing structures shall be entered in the inventory within 90 days. Please notify this office of any newly constructed bridge or culvert within your jurisdiction, more than 20 feet measured along the center of the roadway and carrying public vehicular traffic or over a public roadway, in order that it may be entered in the inventory of bridge structures in compliance with Federal requirements.

Should you have any questions regarding the enclosed Bridge Inspection Report, please contact Bing Wu @ (213) 897-0874.

Sincerely,

CHING CHAO
Office Chief
Structure Maintenance & Investigations - (Investigations-South)

Enclosures

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Bridge Report Transmittal Sheet

Batch 44786

County of Orange

Bridge #	Bridge Name	Location	Inspection Date	Inspection Type	Outstanding Work	Cost
55C0174	SILVERADO CANYON CREEK	1.6 MI E/O SANTIAGO ROAD	12/15/2017	Routine	Y	$

1 Bridge(s) in this Transmittal

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WEB SITES:
The National Bridge Inspection Standards (NBIS) Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, Element Level Inspection, Structure Maintenance and Investigations Manuals, Local Assistance Program Guidelines and other related information are posted on Division of Maintenance, Structure Maintenance and Investigations; Division of Local Assistance, Local Highway Bridge Program (HBP) and FHWA websites.
The websites can be accessed at:
1. "Caltrans Structure Maintenance and Investigations" http://www.dot.ca.gov/hq/structur/strmaint/
2. "Caltrans Division of Local Assistance"
http/www.dot.ca.gov/hq/LocalPrograms/hbrr99/hbrr99a.htm
3. "FHWA" http/www.fhwa.dot.gov/BRIDGE/mtguide.pdf

Inspection Type Definitions

Routine Inspection:
Routine Inspections consist of both the initial Inventory Inspection (the first inspection of the bridge that places it in the bridge inventory or when there has been a change in the configuration of the structure) and subsequent regularly scheduled inspections. The initial inspection provides all the Structural Inventory & Appraisal (SI&A) data required by federal and state regulations, determines the baseline structural conditions, lists any existing problems, and establishes the load capacity of the structure. Subsequent inspections consist of observations, measurements needed to determine the physical and functional condition of the bridge, to identify any changes from the previously recorded conditions, and verification of its load capacity. These inspections are generally conducted from the deck, ground and/or water level, and from permanent work platforms and walkways, if present. Inspection of underwater portions of the substructure is limited to observations during low-flow periods and/or probing for signs of undermining. Special equipment should be utilized in circumstances where its use provides the only practical access to areas of the structure.

Fracture Critical, Special Feature & Underwater Inspections:
Fracture Critical, Special Feature, and Underwater Inspections are up close, hands-on inspections of one or more members above or below the water level to identify any deficiencies not readily detectable using Routine Inspection procedures. These inspections generally require special equipment such as under-bridge inspection equipment, manlifts, boats, traffic control, and railroad flagging. Personnel with special skills such as divers or structural steel inspectors trained in non-destructive testing techniques may be required.

Other Inspections:
Other Inspections are conducted on damaged structures, structures that have developed specific problems, or structures suspected of developing problems. The scope of these investigations should be sufficient to determine the need for emergency load restrictions or closure of the structure, monitor a changing condition, and to assess the level of effort necessary to effect a repair.

DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 55C0174
Facility Carried: SILVERADO CNYN RD.
Location : 1.6 MI E/O SANTIAGO ROAD
City :
Inspection Date : 12/15/2017

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
X				

STRUCTURE NAME: SILVERADO CANYON CREEK

CONSTRUCTION INFORMATION

Year Built : 1935
Year Modified: N/A
Length (m) : 17.7

Skew (degrees): 36
No. of Joints : 0
No. of Hinges : 0

Structure Description: CIP/RC deck on riveted steel floor beams on simply supported riveted steel through girders (2) on RC pedestals on RC closed end backfilled cantilever abutments on spread footings.

Span Configuration : (W) 1 @ 50.83 ft (E)

SAFE LOAD CAPACITY AND RATINGS

Design Live Load: M-13.5 OR H-15
Inventory Rating: RF=0.75 =>24.3 metric tons Calculation Method: LOAD FACTOR
Operating Rating: RF=1.15 =>37.3 metric tons Calculation Method: LOAD FACTOR
Permit Rating : GGGGG
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: (S) 2.30 ft cu, 23.00 ft, 2.30 ft cu, 4.00 ft sw (N)
Total Width: 9.7 m Net Width: 7.0 m No. of Lanes: 2 Speed: 45 mph
Min. Vertical Clearance: Unimpaired Overlay Thickness: 0.0 inches

Rail Code: 0000

Rail Type	Location	Length (ft)	Rail Modifications
Misc. Steel	Right/Left		

DESCRIPTION UNDER STRUCTURE

Channel Description: Natural earth trapezoidal with a cobbled bottom.

NOTICE

The bridge inspection condition assessment used for this inspection is based on the American Association of State Highway and Transportation Officials (AASHTO) Bridge Element Inspection Manual 2013 as defined in Moving Ahead for Progress in the 21st Century (MAP-21) federal law. The new element inspection methodology may result in changes to related condition and appraisal ratings on the bridge without significant physical changes at the bridge.

The element condition information contained in this report represents the current condition of the bridge based on the most recent routine and special inspections. Some of the notes presented below may be from an inspection that occurred prior to the date noted in this report. Refer to the Scope and Access section of this inspection report for a description of which portions of the bridge were inspected on this date.

INSPECTION COMMENTARY

SCOPE AND ACCESS

This inspection was performed by walking on the bridge shoulders and deck, and under the span. A full visual inspection is performed for the visible substructure elements.

The channel was dry, inspection access is from northeast quadrant.

INSPECTION COMMENTARY

The bridge deck was inspected on 12/15/2017 and the underside elements were inspected on 2/8/2018.

REVISIONS

The entire quantity of the concrete abutments ELI #215 is modified from 24 to 34 meters because the wingwalls are monolithic with the abutments.

SAFE LOAD CAPACITY

The load rating for this structure is being reviewed by SMI Ratings Branch. An updated Load Rating Summary will be archived when this review is complete. The current rating is based on computer output, dated 05/01/1986.

FRACTURE CRITICAL INVESTIGATION

Here is the summary of the fracture critical member inspection that was performed on 05/28/2014 by Carlos Villalobos and Anousheh Rouzbehani from the Office of Specialty Investigations and Bridge Management.

The structure was accessed with a ladder from the ground below. Lane closures and traffic control were not needed.

The investigation was conducted in accordance with the Fracture Critical Member Inspection Plan, dated 05/21/2008.

SUPERSTRUCTURE

STEEL INVESTIGATIONS

This structure qualifies for an in-depth Steel investigation because it possesses the following fracture critical or fatigue prone details:

Girder (Built-Up): FC Members

Fracture Critical: Yes Inspection Freq.: 24 Next Inspection: 05/19/2018

ELEMENT INSPECTION RATINGS AND COMMENTARY

Elem No.	Defect /Prot	Defect	Element Description	Env	Total Qty	Units	Qty in each Condition State St. 1	St. 2	St. 3	St. 4
12			Deck-RC	2	148	sq.m	71	77	0	0
	1080		Delamination/Spall/Patched Area	2	2		0	2	0	0
	1130		Cracking (RC and Other)	2	15		0	15	0	0
	1190		Abrasion (PS Conc./RC)	2	60		0	60	0	0

(12-1080)
The concrete deck exhibits a spall 8 inches X 3 inches X 2 inches at the easterly end of the eastbound lane above the east Abutment.
The concrete deck exhibits two sound patched areas at the west Abutment, the first unsound area is 2 feet X 1 foot at eastbound lane; and the second unsound area is 1 foot X 6 inches at eastbound lane.

ELEMENT INSPECTION RATINGS AND COMMENTARY

Elem No.	Defect /Prot	Defect	Element Description	Env	Total Qty	Units	Qty in each Condition State St. 1	St. 2	St. 3	St. 4
			(12-1130)							
			The concrete deck exhibits transverse cracks, up to 0.04 inches wide, 3 feet long and 3 feet spaced apart.							
			The soffit exhibits several longitudinal and transverse cracks, 0.03 inches wide and 3 feet long without any efflorescence at most bays. Also there is a longitudinal crack in bays 1, 2, 3 and 4 at 10 feet from the north end.							
			(12-1190)							
			The deck exhibits almost 40% light abrasion.							
107			**Girder/Beam-Steel**	2	35	m	0	33	2	0
	1000		**Corrosion**	2	33		0	33	0	0
	1900		**Distortion**	2	2		0	0	2	0
	7000		**Damage**	2	2		0	0	2	0
	515		**Steel Coating-Paint**	2	168	sq.m	128	20	10	10
		3440	**Effectiveness (Steel PC)**	2	40		0	20	10	10
			(107)							
			A fracture critical member inspection was performed (on 05/19/2016) on the tension stress areas of the left and right girders. No fractures or cracks were found.							
			(107-1000)							
			Freckled rust has formed on the above the deck portions of the through girders. (see the attached photo no. 6)							
			(107-1900)							
			Both through girders were hit and deformed especially at the east end. (see the attached photo no. 5)							
			(107-7000)							
			Both through girders were hit and deformed especially at the east end. (see the attached photo no. 5)							
			(107-515-3440)							
			The paint system was failed, where the top portion of the steel through girder is rusted.							
152			**Floor Beam-Steel**	2	68	m	66	2	0	0
	1000		**Corrosion**	2	2		0	2	0	0
	515		**Steel Coating-Paint**	2	164	sq.m	149	0	15	0
		3440	**Effectiveness (Steel PC)**	2	15		0	0	15	0
			(152-1000)							
			The top flange of floor beam #2 (first full width floor beam) is rusted at the northerly 4 feet.							
			(152-515-3440)							
			The paint is failed at the top flange of floor beam #2 (first full width floor beam) of the northerly 4 feet.							
215			**Abutment-RC**	2	34	m	30	3	1	0
	1080		**Delamination/Spall/Patched Area**	2	2		0	1	1	0
	1130		**Cracking (RC and Other)**	2	2		0	2	0	0
			(215)							
			Monolithic wingwalls are included in the total quantity.							
			(215-1080)							

ELEMENT INSPECTION RATINGS AND COMMENTARY

Elem No.	Defect /Prot	Defect	Element Description	Env	Total Qty	Units	Qty in each Condition State St. 1	St. 2	St. 3	St. 4
			Northeast wingwall has a spall 1.5 feet X 3 inches X 3 inches with rebar exposed and rusted. (see the attached photo no. 7) There three spalls 12 inches X 3 inches X 2 inches at the top of east back wall.							
			(215-1130) There are three vertical and diagonal cracks, up to 0.05 inches at west abutment.							
311		**Bearing-Moveable**		2	3	each	2	1	0	0
	1000	**Corrosion**		2	1		0	1	0	0
			(311-1000) South bearing is rusted above the east abutment.							
313		**Bearing-Fixed**		2	3	each	3	0	0	0
			(313) There were no significant defects noted.							

WORK RECOMMENDATIONS

RecDate: 12/15/2017
Action : Sub-Patch spalls
Work By: LOCAL AGENCY
Status : PROPOSED

EstCost:
StrTarget: 2 YEARS
DistTarget:
EA:

Patch the spall 1.5 feet X 3 inches X 3 inches with rebar exposed and rusted at Northeast wingwall.

RecDate: 02/14/2005
Action : Paint-Spot Prep/Pain
Work By: LOCAL AGENCY
Status : PROPOSED

EstCost:
StrTarget: 6 YEARS
DistTarget:
EA:

Spot blast and paint the freckled rust portions of the through girders above the deck.

Team Leader : Ashraf Shenouda

Report Author : Ashraf Shenouda

Inspected By : A.Shenouda/KD.Henderson

6/7/2018

Ashraf Shenouda (Registered Civil Engineer) (Date)

STRUCTURE INVENTORY AND APPRAISAL REPORT

********** IDENTIFICATION **********

(1)	STATE NAME- CALIFORNIA	069
(8)	STRUCTURE NUMBER	**55C0174**
(5)	INVENTORY ROUTE(ON/UNDER)- ON	140000000
(2)	HIGHWAY AGENCY DISTRICT	12
(3)	COUNTY CODE 059 (4) PLACE CODE	00000
(6)	FEATURE INTERSECTED-	SILVERADO CANYON CREEK
(7)	FACILITY CARRIED-	SILVERADO CNYN RD.
(9)	LOCATION-	1.6 MI E/O SANTIAGO ROAD
(11)	MILEPOINT/KILOMETERPOINT	0
(12)	BASE HIGHWAY NETWORK- NOT ON NET	0
(13)	LRS INVENTORY ROUTE & SUBROUTE	
(16)	LATITUDE	33 DEG 44 MIN 44.33 SEC
(17)	LONGITUDE	117 DEG 39 MIN 00.74 SEC
(98)	BORDER BRIDGE STATE CODE % SHARE	%
(99)	BORDER BRIDGE STRUCTURE NUMBER	

******** STRUCTURE TYPE AND MATERIAL *********

(43)	STRUCTURE TYPE MAIN:MATERIAL-	STEEL
	TYPE- GIRDER & FLOORBEAM SYSTEM CODE	303
(44)	STRUCTURE TYPE APPR:MATERIAL-	OTHER/NA
	TYPE- OTHER/NA CODE	000
(45)	NUMBER OF SPANS IN MAIN UNIT	1
(46)	NUMBER OF APPROACH SPANS	0
(107)	DECK STRUCTURE TYPE- CIP CONCRETE CODE	1
(108)	WEARING SURFACE / PROTECTIVE SYSTEM:	
A)	TYPE OF WEARING SURFACE- NONE CODE	0
B)	TYPE OF MEMBRANE- NONE CODE	0
C)	TYPE OF DECK PROTECTION- NONE CODE	0

********** AGE AND SERVICE **********

(27)	YEAR BUILT	1935
(106)	YEAR RECONSTRUCTED	0000
(42)	TYPE OF SERVICE: ON- HIGHWAY-PEDESTRIAN	5
	UNDER- WATERWAY	5
(28)	LANES:ON STRUCTURE 02 UNDER STRUCTURE	00
(29)	AVERAGE DAILY TRAFFIC	2000
(30)	YEAR OF ADT 2009 (109) TRUCK ADT	1 %
(19)	BYPASS, DETOUR LENGTH	199 KM

********** GEOMETRIC DATA **********

(48)	LENGTH OF MAXIMUM SPAN	17.7 M
(49)	STRUCTURE LENGTH	17.7 M
(50)	CURB OR SIDEWALK: LEFT 0.7 M	RIGHT 1.2 M
(51)	BRIDGE ROADWAY WIDTH CURB TO CURB	7.0 M
(52)	DECK WIDTH OUT TO OUT	9.7 M
(32)	APPROACH ROADWAY WIDTH (W/SHOULDERS)	7.0 M
(33)	BRIDGE MEDIAN- NO MEDIAN	0
(34)	SKEW 36 DEG (35) STRUCTURE FLARED	NO
(10)	INVENTORY ROUTE MIN VERT CLEAR	99.99 M
(47)	INVENTORY ROUTE TOTAL HORIZ CLEAR	7.0 M
(53)	MIN VERT CLEAR OVER BRIDGE RDWY	99.99 M
(54)	MIN VERT UNDERCLEAR REF- NOT H/RR	0.00 M
(55)	MIN LAT UNDERCLEAR RT REF- NOT H/RR	0.0 M
(56)	MIN LAT UNDERCLEAR LT	0.0 M

********** NAVIGATION DATA **********

(38)	NAVIGATION CONTROL- NOT APPLICABLE CODE	N
(111)	PIER PROTECTION- CODE	
(39)	NAVIGATION VERTICAL CLEARANCE	0.0 M
(116)	VERT-LIFT BRIDGE NAV MIN VERT CLEAR	M
(40)	NAVIGATION HORIZONTAL CLEARANCE	0.0 M

****

	SUFFICIENCY RATING =	46.5
	STATUS	
	HEALTH INDEX	86.7
	PAINT CONDITION INDEX =	90.0

********** CLASSIFICATION ********** CODE

(112)	NBIS BRIDGE LENGTH- YES	Y
(104)	HIGHWAY SYSTEM- NOT ON NHS	0
(26)	FUNCTIONAL CLASS- LOCAL RURAL	09
(100)	DEFENSE HIGHWAY- NOT STRAHNET	0
(101)	PARALLEL STRUCTURE- NONE EXISTS	N
(102)	DIRECTION OF TRAFFIC- 2 WAY	2
(103)	TEMPORARY STRUCTURE-	
(105)	FED.LANDS HWY- NOT APPLICABLE	0
(110)	DESIGNATED NATIONAL NETWORK - NOT ON NET	0
(20)	TOLL- ON FREE ROAD	3
(21)	MAINTAIN- COUNTY HIGHWAY AGENCY	02
(22)	OWNER- COUNTY HIGHWAY AGENCY	02
(37)	HISTORICAL SIGNIFICANCE- NOT ELIGIBLE	5

********** CONDITION ********** CODE

(58)	DECK	5
(59)	SUPERSTRUCTURE	5
(60)	SUBSTRUCTURE	7
(61)	CHANNEL & CHANNEL PROTECTION	8
(62)	CULVERTS	N

********* LOAD RATING AND POSTING ********* CODE

(31)	DESIGN LOAD- M-13.5 OR H-15	2
(63)	OPERATING RATING METHOD- LOAD FACTOR	1
(64)	OPERATING RATING-	37.3
(65)	INVENTORY RATING METHOD- LOAD FACTOR	1
(66)	INVENTORY RATING-	24.3
(70)	BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS	5
(41)	STRUCTURE OPEN, POSTED OR CLOSED-	A
	DESCRIPTION- OPEN, NO RESTRICTION	

********** APPRAISAL ********** CODE

(67)	STRUCTURAL EVALUATION	5
(68)	DECK GEOMETRY	3
(69)	UNDERCLEARANCES, VERTICAL & HORIZONTAL	N
(71)	WATER ADEQUACY	9
(72)	APPROACH ROADWAY ALIGNMENT	6
(36)	TRAFFIC SAFETY FEATURES	0000
(113)	SCOUR CRITICAL BRIDGES	8

********** PROPOSED IMPROVEMENTS **********

(75)	TYPE OF WORK- SUP/SUB REHAB CODE	35
(76)	LENGTH OF STRUCTURE IMPROVEMENT	17.7 M
(94)	BRIDGE IMPROVEMENT COST	$171,000
(95)	ROADWAY IMPROVEMENT COST	$34,200
(96)	TOTAL PROJECT COST	$287,280
(97)	YEAR OF IMPROVEMENT COST ESTIMATE	2017
(114)	FUTURE ADT	4204
(115)	YEAR OF FUTURE ADT	2035

********** INSPECTIONS **********

(90)	INSPECTION DATE 12/17	(91) FREQUENCY	24	MO	
(92)	CRITICAL FEATURE INSPECTION:		(93) CFI DATE		
A)	FRACTURE CRIT DETAIL-	YES	24 MO	A)	05/16
B)	UNDERWATER INSP-	NO	MO	B)	
C)	OTHER SPECIAL INSP-	NO	MO	C)	

SILVERADO CANYON CREEK

1.6 MI E/O SANTIAGO ROAD | 12/15/2017 [AAR] | 55C0174

107 - PHOTO-Super-Damage/Deteroration

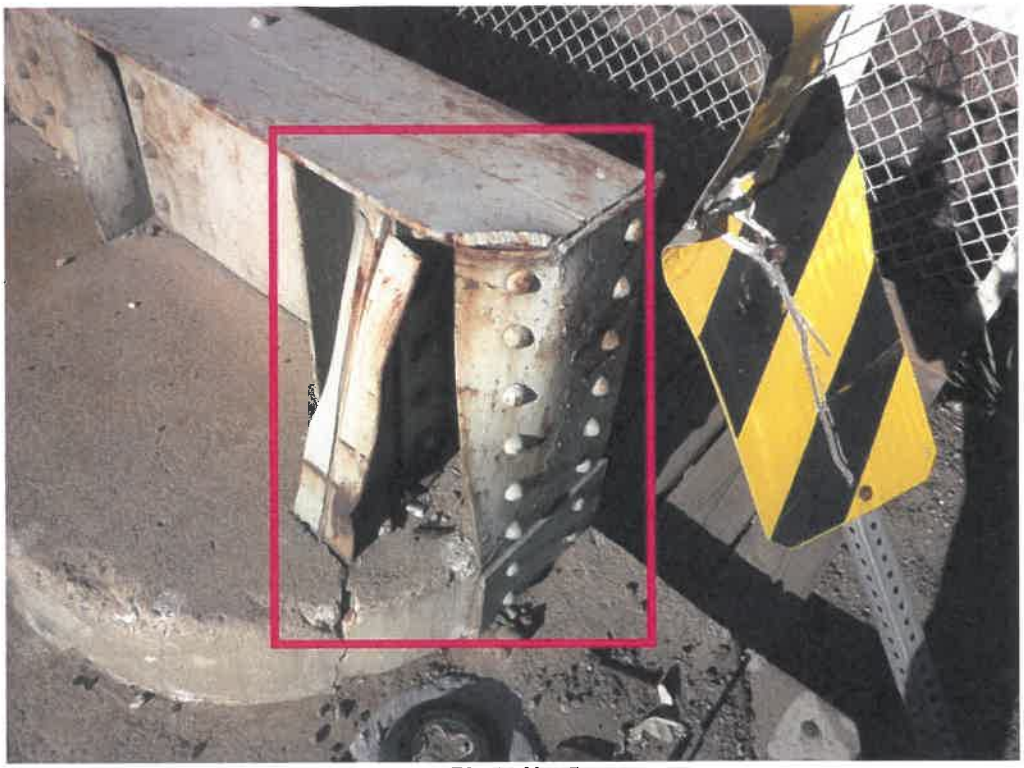

Photo No. 5

Through steel girder was hit and deformed at the east end.

107 - PHOTO-Super-Damage/Deteroration

Photo No. 6

North steel girder is rusted.

SILVERADO CANYON CREEK

1.6 MI E/O SANTIAGO ROAD | 12/15/2017 [AAAR] | 55C0174

113 - PHOTO-Sub-Damage/Deterioration

Photo No. 7

A spall 1.5 ft X 3 in. X 3 in at northeast wingwall with exposed rebars.